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ABSTRACT

A study was conducted for the President's Commission on the Accident at Three Mile Island to analyze coverage of the accident by ten news organizations: two wire services, three commercial television networks, and five daily newspapers. Copies of all stories and transcripts of news programs during the first week of the accident were examined from the perspective of a time line of events at the nuclear reactor. The study focused on 20 critical events during that week. College students were trained to code the printed and transcribed news stories, and interviews with all major officials and public relations personnel involved in management of the accident were available to cross check information. Findings indicated that (1) news of events was delayed or unreported, (2) disputes among officials were unreported, (3) news coverage reflected confusion among sources, (4) background or contextual information failed to be included, (5) presence of a gas bubble in the reactor vessel was not overplayed, and (6) coverage relied on secondary sources. (AEA)

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A CONTENT ANALYSIS OF NEWS MEDIA COVERAGE OF THE ACCIDENT AT THREE MILE ISLAND

To be presented at the International Conference on Communication of the International Communication Association

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This research was conducted for the President's Commission on the Accident at Three Mile Island with David M. Rubin, Peter M. Sandman and Patricia Weil, and with the assistance of Ellen Glassman, Donald O'Grady, Trisha Thompson and Marta Hollister.

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There are times when the role of the news media in the political system shifts from being merely necessary to being crucial. With panic and catastrophe in the air, flaws in the information chain between official and citizen threaten the mental and physical well-being of the population. Disasters and disorders are such occasions. After the events of the spring of 1979 near Harrisburg, Pennsylvania, it is now clear that nuclear accidents must be added to that list.

On the morning of March 28, 1979, a series of human and mechanical errors prevented the cooling system for one of Metropolitan Edison's two nuclear reactors on Three Mile Island from functioning properly. The result was what the President's Commission on the Accident at Three Mile Island labeled "the worst accident in the history of commercial nuclear power generation." Between 300 and 500 reporters covered the story. At Three Mile Island these reporters met one of the most politically charged issues of the past few years; they met a technology most did not understand; and they met official sources who were not

prepared and not anxious to provide candid information. And reporters faced these problems while trying to service a public torn between skepticism and panic, a public dependent almost exclusively on the news media for information on which to base a decision on an important question of public policy and in some cases a decision on whether to flee. During the accident a Nuclear Regulatory Commission official said, "We face the ultimate risk of a meltdown." A meltdown could have had catastrophic radiological consequences for the population in the immediate area and beyond.

How well did the news media perform in this difficult situation where their performance was critical? In other words, in a crisis with far-reaching political implications and destructive potential, how well did the news media do their job of informing the public? The Task Force on Public Information was charged with investigating this question for the President's Commission on the Accident at Three Mile Island. As part of this investigation, the authors conducted a content analysis of coverage of the major events of the accident in selected news media.

In our analysis we looked for answers to the following questions: Did the media cover the significant events of the accident? Was coverage of these events clear and accurate? Did the media provide the background and contextual information needed to understand these events? Were the events exaggerated by the media? And what were the sources of the information or misinformation on these

events that was reported in the media? In answering these questions we hoped to shed light on the quality and scope of the information the news media provided the public and to find indications of the causes of deficiencies in that information.

According to past research, portents for press performance at Three Mile Island were not good. Scanlon in JOURNALISM QUARTERLY quotes Dyne as saying, "Early media reports of an unexpected event will tend to exaggerate the extent of the crisis."[1] And Scanlon notes Barton's statement that "the media will disseminate fragmentary and speculative reports without checking their accuracy." In his own study of coverage of six events, ranging from a policeman's murder to a major gas explosion, in selected Canadian news media, Scanlon found that "the general impression left by the media accounts was, on the whole, accurate."[2] But on significant details of these tragedies he said his research tends to confirm the pessimistic findings that other scholars have reported: "The media were inaccurate, confused and contradictory." It is also interesting to note that all the errors Scanlon caught were in statements that were <u>not</u> attributed; no source was given for the misinformation.

Three Mile Island, of course, was more than a crisis; it was a scientific crisis -- perhaps the worst in American history. If research on crisis coverage has not been encouraging, the literature on coverage of science provides no more cause for optimism. In a study in which articles on

science appearing over a three month period in a sample of 20 newspapers with circulations exceeding fifty thousand were reviewed by the scientists cited in the articles, Tankard and Ryan found that the scientists reported that only 8.8 percent of the stories contained no errors.[3] And in an earlier study of science coverage, in which readers' recountings of 75 articles on scientific issues that appeared in 14 midwestern metropolitan daily newspapers were checked by the scientists cited in the articles, Tichenor, Olien, Harrison and Donohue found the highest reported accuracy when articles were based on the heaviest face-to-face contact between reporter and source.[4] Such face-to-face interaction was infrequent during the accident at Three Mile Island. Reporters received most of their information in large press briefings. Tichenor, Olien, Harrison and Donohue found that articles on science written after coverage of a single public meeting averaged only 51.9 percent "communication accuracy" when readers' recountings were examined by the scientists.

However, a positive trend in science coverage was spotted by Cole who compared science coverage in four metropolitan newspapers in 1951, 1961 and 1971 and found reporting of controversy increasing.[5]

Analysis of coverage of the accident at Three Mile Island meant extending this research on the adequacy of crisis and scientific journalism into additional areas of pressing importance. Failures in reporting of scientific issues here could have had immediate consequences for public health and

safety. This was a prolonged crisis during which the danger of panic or catastrophe was ever present. This crisis also received media coverage of a different level of intensity than any of the crises studied by Scanlon.

Methods

The analysis was restricted to the first week of coverage -- from the declaration of a general emergency on Wednesday morning, March 28, to the realization that the situation was stable and the danger of a meltdown had passed on Tuesday, April 2. Ten news organizations were selected for analysis: the two major suppliers of information to the nation's newspapers and broadcast stations -- the Associated Press and United Press International; the three commercial television networks -- ABC, CBS and NBC; three of the country's most influential newspapers, which also function as suppliers of news to other papers through their news services -- the New York Times, Washington Post and Los Angeles Times; and the two major newspapers in the area of the accident -- the Harrisburg Patriot/Evening News and Philadelphia Inquirer. A study of the 50 United States newspapers on file at the New York Public library showed that these papers received the large majority of their news on the accident from the news organizations in our study.

Copies of all stories transmitted nationally on the "A wires" by the wire services that related to the accident or nuclear power were obtained, along with copies of the final edition of each of the newspapers and transcripts of network evening and morning news programs and network specials on Three

Mile Island.

Other studies of science reporting have relied on sources' evaluations of stories in which they are cited. The resources of the President's Commission enabled us to use a less subjective standard for evaluating stories. We relied on an exhaustive time line of events at the reactor prepared by Commission staffers. Media coverage was examined from the perspective of this comprehensive reconstruction of events. Our standard for accuracy and completeness, therefore, was similar to that used in Scanlon's study in which researchers were sent to the scene of each crisis to provide detailed accounts of what occurred.

The study focused on 20 critical events during the week of the accident (see box). In addition, 42 background or contextual facts were included in the analysis. For example, for the first event, Metropolitan Edison's declaration of a general emergency, the fact that a general emergency is the highest level of nuclear power plant emergency or radiation emergency was included as a background fact.

Nine coders, graduate and undergraduate students, were employed in the study. They were required to note the appearance of an event or background fact in a story. Certain words or restricted synonyms for those words had to be present for an item to be noted as having been mentioned. For the declaration of the general emergency, for instance, it was necessary that the article use the words "general emergency."

Each time an item was mentioned in a different article or by different sources within the same article it was recorded. The coders also noted the source to which the story attributed the item, if any, and any discrepancies from the working of the item that had been prepared based on the time line.

There was a two-week training period for the coders during which they were briefed on the accident, acquainted with much of the available published information on the accident, asked to memorize all 62 events and facts, and drilled in the content analysis until they were agreeing approximately 90 percent of the time. The coders were placed into three teams of two and one team of three.

Finally, in analyzing the results of our study we had access to detailed interviews conducted by other Commission staffers with all the major officials and public relations personnel involved in management of the accident, and we had copies of all the press releases they issued as well as transcripts of their briefings, meetings and some of their conversations. It was possible to trace virtually all the information and misinformation that appeared in media coverage. Therefore, in our results we can frequently go beyond noting what was and was not reported, and indicate what information was available to reporters, and what sources and officials were saying at the time.

Results

News of Events Delayed or Unreported

Despite the fact that officials had begun to discuss the possibility that the reactor core was partially uncovered on Wednesday afternoon, the first mention of this fact in the news media surveyed was in the Washington Post on Friday morning. Metropolitan Edison began releasing waste water into the Susquehanna at 2:30 Thursday afternoon; it was not reported until the information was released in a press release after midnight. Potassium iodide was brought to the site on Saturday; it was not reported until Monday.

Other significant events were missed completely during the period surveyed in the media surveyed. There was no mention of the evacuation of Metropolitan Edison employees from the reactor control room. During this period, the media surveyed did not report on the ongoing struggle Wednesday to start the reactor coolant pumps -- perhaps the key to understanding the scope of the accident. Transcripts of their briefings and press releases indicate that the Nuclear Regulatory Commission and Metropolitan Edison never specifically announced that the pumps were not operating for significant periods of time; however, reporters with the proper technical background might have been able to deduce this from other available information. Since no one mentioned that the pumps were off, it is not surprising that there was only one offhand mention, on ABC, of the fact that the pumps had been turned on Wednesday evening.

Nuclear Regulatory Commission engineers concluded by Wednesday afternoon that there had never been any danger of a bubble explosion within the reactor vessel, according to transcripts of their conversations and interviews with the principals. This too went unreported, and the media surveyed continued to discuss the danger of such an explosion. Transcripts and later interviews indicate that facts such as this were delayed, withheld or intentionally obscured by officials. It is not clear whether they might have been obtained through more enterprising reporting.

Disputes Among Officials Unreported

Governor Thornburgh's recommendation that pregnant women and pre-school children leave the area, announced at a press conference, is the type of story the media can cover easily and well. All the media we surveyed had the story, and by the next morning all except the Los Angeles Times provided the information needed to understand Thornburgh's action -- the fact that fetuses and children are more vulnerable to radiation than adults. However, the media surveyed missed the major behind-the-scenes story, a story that certainly would have been of significance to their audiences: Shortly before Thornburgh's announcement the Nuclear Regulatory Commission had recommended a mass evacuation. State officials had disagreed. None of this was reported.

Certainly there was no shortage of coverage of the fact that officials were releasing conflicting and confused statements. Whole articles were written on the subject after the 1200 mr/hr burst of radiation. Yet despite all the attention

paid to the confusing and conflicting information officials were releasing, the news media surveyed missed the much more important story that the decision makers themselves were confused and in conflict on major issues. To be sure, these stories were not being handed to reporters. However, two clues were available on the morning of Thornburgh's announcement that might have led enterprising reporters to the controversy surrounding the evacuation: An evacuation alert had been broadcast over local radio, and residents had been instructed to stay indoors. No one pursued these clues and found the story.

The media surveyed also missed the political jockeying that occurred after Metropolitan Edison dumped the waste water into the Susquehanna, although the jockeying was probably more significant than the dumping. Only the Associated Press and the Washington Post mentioned that the dumping of waste water was stopped for some hours before being resumed with permission. None of the media surveyed reported that the Nuclear Regulatory Commission had specifically ordered Metropolitan Edison to stop the dumping. Similar behind-the-scenes disputes on the 1200 mr/hr burst of radiation and on the meaning of a general emergency also went unreported.

Cole's finding that reporting of controversy has been increasing in science coverage was not evident here.

Reflected Source Confusion

Our findings here contrast with Scanlon's. The mis-

information on the events we looked for that appeared in the media surveyed generally was attributed, usually to official sources. In general, confusion among official sources was mirrored by confusion in the media. Major distortions in the picture presented the public of significant aspects of the accident were caused by faithful reporting of official statements.

For example, the question of whether there had been damage to the core was the second most mentioned item in our study, but media coverage of the question was confused and conflicting, in large part because Nuclear Regulatory Commission officials on site were reported to be denying that there had been any fuel damage well after Nuclear Regulatory Commission officials in Bethesda were reported to have acknowledged that there had been damage to the core. On the Associated Press cycle from noon to midnight Wednesday, there were statements from Nuclear Regulatory Commission officials in Bethesda saying the core was apparently damaged and two contradictory statements from Nuclear Regulatory Commission officials on site saying the accident "caused no damage to the reactor core." Similarly, the media faithfully reported statements denying that operator error had contributed to the accident long after operator error was being discussed as a cause of the accident in official circles. The Nuclear Regulatory Commission was discussing operator error as early as Wednesday afternoon according to transcripts and interviews with the principals, yet on Friday morning the New York Times carried official denials that operator error had contri-

buted to the accident. Throughout the early days of the accident the media surveyed echoed official statements by emphasizing equipment malfunction as the cause of the accident. The President's Commission and other investigators, however, have since placed the majority of the blame on operator error.

Of all the events studied, Metropolitan Edison's venting of the 1200 mr/hr burst of radiation was probably the one on which official sources were most contradictory. Again this confusion was reflected in news accounts. The media surveyed carried incorrect official statements saying that the burst had been unplanned, unexpected and uncontrolled. And United Press International also reported a statement saying that the burst had a "maximum radiation level of 350 mr/hr," attributed to an Atomic Industrial Forum release.

Failure To Include Background or Contextual Information

In coverage of many of the events we looked at, the media surveyed failed to provide information necessary to understand the significance of the events. For example, Metropolitan Edison declared a general emergency at 7:24 Wednesday morning. The Associated Press mentioned that fact at 9:06, United Press International 49 minutes later. While television coverage of this event was spotty -- CBS did not (specifically) mention it that evening, ABC called it a general alarm -- all the newspapers we surveyed, except the Los Angeles Times, had the story by the next morning. Nevertheless, none of the media surveyed noted on Wednesday or Thursday that a general

emergency is the highest level of radiation emergency, that it is defined as an incident that has the potential for serious radiological consequences to the health and safety of the general public, or that the main decision that has to be made after declaration of a general emergency is whether to evacuate the local population. Later reconstructions of events indicate that in large part this failure to explain the general emergency can be traced to official confusion and reticence, but to the extent to which they failed to press officials or develop other sources, reporters failed their audiences.

Coverage of the dumping of slightly radioactive industrial waste water into the Susquehanna was also marked by an absence of background facts. The Associated Press, United Press International, the New York Times, Washington Post, Philadelphia Inquirer and CBS all had the story. All included statements that the water posed little or no health hazard, but only the Associated Press and the Washington Post (which carried the Associated Press story) noted that dumping industrial waste water from the plant was a routine event, although this information was available in a press release. And only CBS reported that the material dumped into the river did not come from the accident. These background facts would have been useful to reassure a distrustful public.

Metropolitan Edison's venting of the 1200 mr/hr burst of radiation was mentioned 56 times in the news media surveyed, but none of these media specifically noted that before reaching populated areas radiation had dissipated to levels that did

not pose an immediate health hazard. And CBS, NBC and the Los Angeles Times failed to accompany their initial reports on the burst with any numerical measure of the radiation it contained.

Of the media that mentioned the detection of radioactive iodine in the area, only one, the Philadelphia Inquirer, accompanied its report with the information necessary to understand the significance of that detection: the fact that radioactive iodine can collect in the body or in milk. None of these news organizations reported during the period surveyed that upon retesting iodine-131 levels were found to be extremely low.

Finally, in discussing the fact that radiation above background levels had been detected up to 16 miles from the plant, none of the news media surveyed noted that the health hazard of radiation is cumulative. Only the Philadelphia Inquirer and the Harrisburg Evening News included in this context information on yearly radiation exposure, which might have helped their audiences understand the significance of the figures they were given.

Bubble Coverage Not Overplayed.

The presence of the gas bubble in the reactor vessel was the most mentioned item in our survey (151 mentions). It dominated coverage of the accident from Friday evening to the end of the period on Tuesday. News of the bubble and the dangers it posed led to the most alarming coverage in the media surveyed. The New York Times headline Saturday morning read, "U.S. AIDES

SEE RISK OF MELTDOWN..." The Philadelphia Inquirer headed its story, "Possible 'Melt-down' Feared..." These stories were based, accurately, on a Nuclear Regulatory Commission press conference in Bethesda at which a Nuclear Regulatory Commission official said, "The risk involved is that the gas would expand, prevent cooling of the core, that we could suffer additional core damage...with the ultimate risk of a meltdown."

The news media surveyed did not play up one potentially alarming fact -- that such a bubble was not covered in Nuclear Regulatory Commission plans. ABC, CBS, the Washington Post and United Press International did not report this fact during the period surveyed. On the other hand, ABC, CBS, the New York Times and Harrisburg Evening News did not protect against a possible misunderstanding by noting that a hydrogen bubble explosion would be chemical, not nuclear.

Perhaps the most controversial story of the period was the Associated Press' Saturday night story attributing to a Nuclear Regulatory Commission official the news that the bubble might explode in as little as two days. The source of this story was not and has not been identified, but transcripts and interviews demonstrate that it did reflect a school of thought within the Nuclear Regulatory Commission at that time. Significantly, the Associated Press story was picked up by only one of the other media surveyed. The Philadelphia Inquirer mentioned it while reporting that the Nuclear Regulatory Commission's Harold Denton discounted the possibility of an imminent explosion.

The media surveyed seemed attuned to the changes in the Nuclear Regulatory Commission's perception of the dangers posed by the bubble on Friday and Saturday. However, only the Associated Press, Washington Post, Harrisburg Evening News and ABC mentioned a statement by a Metropolitan Edison official Monday morning that the bubble was nearly gone, which was not surprising considering the state of Metropolitan Edison's credibility at the time and the fact that the statement was retracted. All the news media surveyed on Monday and Tuesday reported Denton's encouraging statements about the bubble.

Reliance on Secondary Sources

On some important events, the failure of official sources to provide information to the media was partially remedied by the use of secondary sources. The first mention of the general emergency, by (the) Associated Press, was attributed to "a state police spokesman." The first mention of the role of operator error in the accident, by United Press International, was attributed to Senator Gary Hart. And the first mention of fuel damage in the reactor, also by United Press International, was attributed to Robert Pollard of the Union of Concerned Scientists. In these cases at least, with official sources blocked, the media surveyed were able to find other, if less satisfactory, sources.

Conclusions

Were these critical events during the accident at Three Mile Island exaggerated by the media? No. Generally coverage

of these events in the media surveyed was restrained. Early reports of the crisis did not tend to exaggerate it; in fact, by leaving out background facts that would have underlined its seriousness, these reports seemed to underplay the crisis. And throughout the period surveyed, even the most potentially alarming stories proved to be accurate reflections of official concerns. What this study can not determine is whether officials themselves were overly concerned or too sanguine.

Some of the media's apparent sobriety may have been due to the selection of elite news organizations for the study, but much of it may have been caused by the duration and the gravity of the crisis. In situations of such persistent hazard, reporters would have difficulty ignoring their responsibility to avoid causing needless panic. They seemed content to err on the side of caution.

But the gravity of the situation may also have contributed to a tentativeness among otherwise aggressive reporters, a hesitancy to employ their normal skepticism and their usual tools for digging below the surface. In addition, reporters may have been too intimidated by the unfamiliar scientific and technical terms with which they were confronted to pursue leads with their normal enterprise. The very intensity of the coverage, and therefore the swollen size of the press corps, limited face-to-face interaction with officials and may also have handicapped reporters. For the fact remains that many important stories -- such as the dispute on the need for a mass evacuation and the seriousness of the problems with the main core cooling pumps -- went unreported.

So, did the news media cover the significant events of the accident? Not all of them. Some information with important health and safety consequences for the people in the area was not being made available to those people by the media surveyed.

Was coverage of the critical events of the accident clear and accurate? Yes and no. Generally the media surveyed accurately reported the statements of official sources. However, transcripts and later interviews demonstrate that the official sources were often confused and conflicting.

Did the media provide the background and contextual information needed to understand these events? Often, no. The media surveyed failed to place such significant events as the declaration of a general emergency and the venting of the 1200 mr/hr burst of radiation in meaningful contexts.

Nevertheless, an analysis of the sources noted in media reports and transcripts and later interviews with officials shows that most of the blame for these failures to provide the public with necessary information, and the confusion and inaccuracy in some of the information that was provided, must rest with the officials in charge. Officials sometimes misled, sometimes withheld and sometimes were themselves misinformed.

As the President's Commission recognized, in such crises a public information system that provides the public with all relevant information is imperative. During a nuclear accident, deficiencies in the information provided the public, such as the ones outlined in this report, are not merely unfortunate; they are unacceptable.

FOOTNOTES

1 T. Joseph Scanlon, Rudy Luuko and Gerald Morton, "Media Coverage of Crises: Better than Reported, Worse than Necessary," Journalism Quarterly, 55:68-72 (1978).

2 Ibid.

3 James W. Tankard Jr. and Michael Ryan, "News Source Perceptions of Accuracy of Science Coverage," Journalism Quarterly, 51:219-25, 334 (1974).

4 Phillip J. Tichenor, Clarice N. Olien, Annette Harrison and G.A. Donahue, "Mass Communication Systems and Communication Accuracy in Science News Reporting," Journalism Quarterly, 47:673-83 (1970).

5 Bruce J. Cole, "Trends in Science and Conflict Coverage in Four Metropolitan Newspapers," Journalism Quarterly, 52:465-71 (1975).

BOX

CRITICAL EVENTS INCLUDED IN THE ANALYSIS AND THE DATE THEY OCCURRED

1. Metropolitan Edison declares a general emergency. (March 28)
2. Realization that errors by control room operators may have contributed significantly to the accident. (March 28)
3. Realization that equipment malfunction may have contributed significantly to the accident. (March 28)
4. State officials and Metropolitan Edison discuss evacuation. (March 28)
5. Evidence mounts that core was uncovered and nuclear fuel rods damaged. (March 28)
6. Unnecessary personnel evacuated from Emergency Control Room because of high radioactivity. (March 28)
7. Radiation above background levels detected up to 16 miles from plant. (March 28)
8. Iodine-131 found in air on site. (March 28)
9. Radiation readings of 1-2 millirems per hour in Middletown. (March 28)
10. A reactor coolant pump is started. (March 28)
11. Four Metropolitan Edison employees found to have received radiation exposures in excess of the allowed amount for a three-month period. (March 28)
12. Metropolitan Edison releases slightly radioactive industrial waste water into the Susquehanna River. (March 29)
13. A gas bubble containing hydrogen is now known to exist at the top of the reactor vessel. (March 30)
14. Metropolitan Edison vents biggest burst yet of radioactive gas into atmosphere. (March 30)

15. Governor Thornburgh advises pregnant women and pre-school children to leave area within five-mile radius of plant. (March 30)

16. Bureau of Radiological Health brings in supply of non-radioactive potassium iodide. (March 31)

17. Government asks Metropolitan Edison to stop giving technical information to public. (March 31)

18. Nuclear Regulatory Commission engineers now think there had never been any danger of an explosion. (April 1)

19. Metropolitan Edison says the bubble is nearly gone. (April 1)

20. Nuclear Regulatory Commission says the bubble is nearly gone. (April 2)